In this reflective statement, I will be talking about my progress throughout the weeks for my Games Specialism briefs. For the games specialism, I have chosen programming to be my specialism because I want to explore the foundations of programming and to also get into the hang of unity; game development especially (it is my goal to become a programmer within the games industry and will be the end goal after graduating from university). The briefs I have chosen in the program specialism are to create a speedometer (that is influenced by rigidbody), a URP Scrolling texture and an FPS meter for games. I will be explaining what went well with each brief and some problems I came along the way and how I can improve.

First brief, I would like to talk about is the FPS meter. I chose the FPS meter as I wanted to learn how to code readings into projects especially with the UI interface. FPS meters are very common in every game to determine how many frames per second a game is running on and to track how the game is running smoothly. What really went well with this brief was how simple the coding was and getting to understand it. By adding floats count the pollingTime and time and with an integer that tracks frameCount we have data to track and calculate frames per second. For example, the FPS text will be updated to show the game frame rate as (time -= pollingTime) and time += Time.deltaTime. This brief was very understandable by how quick I was able to learn how to calculate frames per second with simple uses of integers and floats to show it off. However, there is one thing I think I could’ve improved on with this brief and that was to add an additional graph to show the frame rate throughout the past ten seconds. This is because with games that I have played such as Valorant, Counter Strike: Global Offensive (CS:GO), Overwatch etc; they have settings where you as the player can select to show your frame rate through text or graph. As a person who has played these games, I loved the feature of graphs when tracking frames or packet loss as it allows me to see how frequent frame drops are. For future reference I will add graphs to frame counters to really challenge myself when programming it and to learn from it so it can pass on to future projects.

For my second brief, I have chosen to do a speedometer due to how useful it is in games like Need for Speed and Forza Horizon. Learning how to code the speedometer had its ups and downs while proceeding with this brief, for starters I had to code in another script for an object to move with the ‘rigidbody’ component, it was simple but time consuming but nevertheless the code for the speedometer was kind of challenging at first as I tried to display the speedometer in a rotatory dial (ended up adding a rotating dial for my speedometer). The script for my speedometer was understandable as it mainly consists with floats to calculate the minimum speed and maximum speed in which the arrow in the rotatory dial will track and follow which then will update the UI text speed label to display the speed of the object (rigidbody2D) in mile per hour. I also made the arrow only have a maximum rotation of 180 degrees to fit my speedometer dial. However, one thing I could have done better for this brief was to fix the minor problems that were affecting the arrow in the speed dial. Sometimes it would not rotate at all yet alone track the mileage was the object is moving; the actual UI text header will still read the speed of the object, but the arrow will sometimes fail to move. To improve further, I will space out my workload effectively to come back to fix these minor issues in the future.

For my last and final brief, I decided to choose how to program an instance scrolling material within a unity URP format setting. Instance scrolling materials are very common in games as they do tend to bring life into materials and games. Examples can include Garry’ Mod where the game is heavily based on textures and materials provided by the steam community; many of these materials contain scrolling material to bring out the ‘fun’ in Garry’s mod. What I did with the programming of this brief with the use of Universal Render Pipeline asset and the use of shader graphs as well as URP assets. With the use of a shader graph, I could use nodes to follow how the textures are to be implemented on 2D texture objects along with added vectors (Direction) and floats (rotation and scale). With the use of the vector, it allows the texture that is added by the shader graph into an object to move in a particular direction within the x and y axis. For the floats they allowed me to control the scale and rotation of the texture; to create new patterns. And to calculate the direction, I multiplied time by direction which is then connected to the offset node in Tiling and Offset and is then connected to the sample texture. It was very quick to understand how to use nodes and Shader graphs, however there are things that I could have done better for this brief and it was to add another scrolling texture format but apply it to 3D objects/ models instead of 2D objects and textures. By adding features of the shader graph code to apply to 3D objects would allow me to experiment and understand how to create potential assets for future projects. To further improve with this brief would be to try adding more variety for the instance scrolling material to allow it to be applied to more than just 2D objects.

To conclude with the programming specialism briefs, I really enjoyed learning and trying new ways to program, especially coming from myself as before using unity to program, I used Unreal Engine to program and making a transfer to Unity has been challenging yet fun to do. The briefs were very fun to do as it allowed myself to get more understanding about programming in Unity and I will be using those briefs to help me program throughout the summer. The only main improvements that I could have done for the whole specialism is trying to talk to lecturers for help rather than trust the internet for it and to space out my work as I spent three to four weeks on the speedometer. I also need to challenge myself next time with the selection of my briefs as I mainly went for the easy briefs rather than try a harder brief. Overall, the program specialism was fun and enjoyable to do plus I will be using the rest of the briefs in summer to help me with my programming for the next year.